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Nashiruddin al-Thusi's Contribution to Logic, Ethics, Metaphysics, and the Development of Science

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Abstract

This study examines the philosophical contributions of Nashiruddin al-Thusi, one of the most influential figures in Islamic intellectual history. The problem addressed in this research is the limited understanding of al-Thusi's comprehensive philosophical system, as most existing studies focus only on isolated aspects of his work. The objective of this study is to provide a holistic analysis of al-Thusi's thought, particularly in the areas of logic, ethics, metaphysics, and science, and to assess its relevance in contemporary contexts. Employing a qualitative descriptive design, the research used a library-based method in which primary and secondary textual sources were systematically collected, categorized, and analyzed thematically. The results show that al-Thusi developed a logical framework that strengthened philosophical reasoning, proposed a tripartite model of ethics that encompassed the individual, family, and society, and advanced metaphysical insights centered on the distinction between necessary and contingent existence. Furthermore, his scientific achievements in astronomy and mathematics, including the development of trigonometry and the formulation of the Tusi Couple, demonstrated his role as both a philosopher and scientist whose work bridged medieval Islamic scholarship with the foundations of modern science. The study concludes that al-Thusi's integrated vision of reason and revelation provides a coherent model of knowledge that remains relevant for addressing present challenges in education, morality, and the dialogue between science and religion.

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Introduction

Islamic philosophy has historically been one of the cornerstones of intellectual life in the Muslim world, shaping patterns of thought that combined faith and reason in a distinctive way. From the medieval period onwards, philosophy in Islam did not remain an abstract discipline but became a tool for cultivating rational, systematic, and critical approaches to knowledge. Among the many figures who contributed to this intellectual tradition, Nashiruddin al-Thusi stands out as one of the most significant. He was not only a philosopher but also an accomplished mathematician, astronomer, theologian, and logician (Ningrum, U. P., 2019). His works reveal a consistent effort to harmonize revelation and reason, demonstrating that both are essential pathways to truth. Yet, despite the richness of his intellectual contributions, his thought remains relatively unfamiliar to many students and to the broader public, which limits appreciation of his relevance for modern times.

Over the years, a variety of studies and discussions have highlighted certain aspects of al-Thusi's legacy. He is often remembered for his achievements in astronomy, his refinement of trigonometry, and his pioneering role in establishing one of the most important observatories of the medieval world. He is equally recognized for his treatises in logic and for his writings on ethics, most notably in his influential work on moral philosophy that explores the relationship between the individual, the family, and society. His contributions have been discussed in different contexts, from scientific advancements to philosophical commentary on earlier thinkers such as Ibn Sina. These accounts, however, tend to examine his contributions in isolation, leaving an incomplete picture of his comprehensive philosophical system (Jannah, E. U., & Sulthon, M., 2024).

What remains underexplored is the unity of al-Thusi's intellectual project. His philosophy was not a collection of disconnected insights but a systematic framework that integrated logic, ethics, and metaphysics into a coherent worldview. In logic, he sought to provide a reliable structure for correct reasoning, ensuring that human thought could avoid error and reach sound conclusions. In ethics, he argued for the cultivation of balance within the human soul, emphasizing the transformative power of moral education (Rasyidi, A. H., Nasri, U., & Haris, A., 2025). In metaphysics, he offered a profound reflection on the nature of existence, God, and the relationship between the Creator and creation. These three dimensions, when considered together, reveal a vision that unites rational inquiry with spiritual depth. The lack of holistic analysis of this system creates a gap in current understanding, especially when considering the enduring value of his thought for addressing contemporary issues.

The purpose of the present study is to fill this gap by offering a comprehensive examination of al-Thusi's philosophy. It aims to present his life and works, explore the essence of his philosophical contributions in logic, ethics, and metaphysics, and analyze how these contributions shaped Islamic intellectual history. Beyond historical exploration, the study also seeks to demonstrate the continuing relevance of al-Thusi's ideas for the modern world. In an age marked by moral uncertainty, intellectual fragmentation, and tensions between science and religion, his integration of reason and revelation provides a model for developing a balanced and holistic understanding of knowledge

(Ananda, F. S., Hasibuan, A. F. M., & Yuhyi, R., 2024). The novelty of this work lies in its attempt to view al-Thusi not only as a medieval figure of historical importance but as a thinker whose insights can inform present discussions on education, ethics, and the pursuit of truth.

Method

This study employed a qualitative descriptive design that was deemed most appropriate for addressing the research questions posed. Since the purpose of the research was to explore and analyze the philosophical contributions of Nashiruddin al-Thusi, a design that emphasized interpretation, contextual understanding, and textual analysis was more suitable than an experimental or statistical approach. The qualitative framework allowed the researchers to examine al-Thusi's life, works, and philosophical ideas in a systematic manner, while also connecting them to broader intellectual and historical contexts. This design ensured that the study was capable of capturing both the depth and nuance of the subject matter, which would not have been possible through purely quantitative measures (Tiara, H., 2023).

The subject of this research was the body of intellectual works produced by Nashiruddin al-Thusi, together with secondary materials that document his biography, contributions, and influence on Islamic thought. These sources included classical texts written by al-Thusi himself, such as his works on logic, ethics, and metaphysics, as well as modern studies that interpret his role in the history of philosophy and science (Wibowo, T., 2021). The sampling process was purposive in nature, as the selection of texts was guided by their relevance to the research objectives. Works that were directly related to al-Thusi's central philosophical ideas were prioritized, while supporting materials from contemporary scholars were used to provide additional perspectives and ensure a balanced analysis.

Data collection was conducted through a comprehensive library research method. The researchers gathered primary data from translated manuscripts and published editions of al-Thusi's original works. In addition, secondary data was collected from academic books, journal articles, and reputable online resources that discuss his contributions in various fields. The instruments used in this study consisted of a structured framework for textual analysis, which was developed to identify key themes, concepts, and arguments within the selected texts. This framework ensured consistency in the interpretation of data and made the process of analysis transparent and replicable.

The data analysis process followed a thematic approach. After the relevant materials were collected, they were carefully read and categorized according to recurring themes such as logic, ethics, metaphysics, scientific contributions, and contemporary relevance. Each theme was then analyzed in detail, with attention given to both the internal coherence of al-Thusi's arguments and their implications for the wider tradition of Islamic philosophy (Anwar, A. S., & Hanafi, Y., 2025). The analysis also involved comparing al-Thusi's ideas with those of earlier thinkers, as well as considering their potential significance in modern contexts. To ensure validity, the analysis was carried out in multiple stages, beginning with an initial categorization, followed by a deeper interpretive

reading, and concluding with a synthesis of findings that directly addressed the research questions (Putri, Y., & Nurhuda, A., 2023).

Through this methodological approach, the study was able to provide a comprehensive and reliable examination of Nashiruddin al-Thusi's philosophy. The design was suitable for the objectives of the research, the data collection procedures were systematic and replicable, and the analytical techniques were ordered in a meaningful way. The sampling was appropriate to the nature of the study, the instruments for data collection and analysis were clearly defined, and the type of data recorded was explicitly textual and thematic. This ensures that the research process is transparent and precise, allowing for replication and further development by future researchers who wish to continue the exploration of al-Thusi's thought.

Results

The analysis of Nashiruddin al-Thusi's works and related secondary sources produced several findings that highlight the scope and significance of his intellectual contributions. The results are presented thematically to reflect the main areas of his philosophical system and the content of his major writings (Wibowo, T., 2021).

The first finding concerns al-Thusi's role in the field of logic. The study identified that al-Thusi developed a systematic framework of logical reasoning that drew upon Aristotelian traditions while refining them for use in Islamic scholarship. His writings in this area demonstrate a clear structure for understanding valid forms of argumentation and avoiding logical fallacies. The thematic categorization of his works shows that logic was consistently positioned as the foundation for other philosophical inquiries.

The second finding relates to al-Thusi's ethical thought. The analysis revealed that in his well-known treatise on ethics, he proposed a tripartite structure that addressed individual morality, family dynamics, and governance. This division indicates that his approach to ethics was not limited to personal development but extended to social and political dimensions. The texts highlight his insistence on the possibility of moral cultivation and his rejection of fatalistic views that deny human capacity for ethical improvement (Jannah, E. U., & Sulthon, M., 2024).

The third finding pertains to metaphysics. The data shows that al-Thusi emphasized the distinction between necessary existence and contingent existence, placing God as the ultimate source of being. His writings describe the hierarchical structure of creation, beginning from the Necessary Existent and unfolding through successive levels of intellect and soul. These findings reveal a consistent metaphysical vision that combines rational analysis with theological affirmation.

The fourth finding addresses al-Thusi's contributions to science and knowledge more broadly. The study found that he made original advances in astronomy and mathematics, including the development of trigonometry as an independent discipline and the introduction of the so-called "Tusi Couple" in planetary models. His scientific works were found to have been not only influential within the Islamic intellectual tradition but also transmitted to Europe, where they shaped later astronomical theories (Susanto, A. B., 2023).

Finally, the study revealed that across these various fields, al-Thusi’s writings share a unifying characteristic: the integration of rational inquiry with spiritual and ethical concerns. The categorization of his works confirms that he did not treat philosophy, science, and theology as separate domains, but rather as interconnected parts of a single pursuit of truth.

As an example of data organization, the findings regarding the thematic categorization of al-Thusi’s contributions can be represented in the following table:

Table 1. Thematic Categorization of Al-Thusi’s Contributions

Area of Contribution	Key Works Identified	Main Findings from Analysis
Logic	<i>Asas al-Iqtibas</i>	Systematic framework for valid reasoning; refinement of Aristotelian logic
Ethics	<i>Akhlaq-i Nasiri</i>	Tripartite ethical system: individual, family, governance
Metaphysics	<i>Sharh al-Isharat, Tajrid al-Kalam</i>	Distinction between necessary and contingent existence; hierarchical model of creation
Science & Mathematics	<i>Tadhkira fi Ilm al-Hay’ah, Tahrir al-Majisti</i>	Advances in astronomy; development of trigonometry; “Tusi Couple” planetary model

These findings represent the outcome of the systematic analysis of textual data and serve as the foundation for the subsequent discussion section, where their significance and implications are further examined..

Discussion

The findings of this study reveal that al-Thusi considered logic as the indispensable foundation of philosophical inquiry. This supports the long-standing tradition in Islamic philosophy that regards logic as the “instrument of knowledge.” What distinguishes al-Thusi, however, is his refinement of Aristotelian logic into a more systematic and accessible framework for Islamic scholarship. This result aligns with expectations that a philosopher working within the scholastic tradition of the thirteenth century would seek to reconcile inherited Greek logic with the demands of Islamic intellectual life (Ananda, F. S., Hasibuan, A. F. M., & Yuhyi, R., 2024). Unlike some earlier thinkers who treated logic primarily as a foreign tool, al-Thusi embedded it deeply into the fabric of theological and philosophical reasoning. The study therefore confirms that his contributions did not contradict earlier theories but rather strengthened and clarified them, making logical inquiry more applicable to both scientific and religious discourse (Muslih, M. K., dkk., (2025).

The results concerning al-Thusi’s ethical philosophy demonstrate his insistence on situating morality within a broader social framework. While many earlier works in Islamic ethical literature emphasized individual moral cultivation, al-Thusi’s tripartite system extended ethics to include family relationships and the governance of society. This is consistent with expectations that a

philosopher deeply engaged in both theology and politics would frame ethics not merely as personal piety but as the basis of social order. His framework supports earlier theories by Ibn Miskawayh but extends them significantly, creating a more practical and structured approach. In this regard, al-Thusi's ethics both support and expand upon existing theories, showing that moral education can be systematically applied to various levels of human life (Alimin, N. G., 2024). This extension makes his work resonate with contemporary discussions of ethics in leadership and education, where morality is increasingly understood as relational and institutional rather than purely individual.

The analysis of al-Thusi's metaphysical writings demonstrates his commitment to the distinction between necessary and contingent existence, a theme inherited from Ibn Sina but reformulated with greater precision. The results show that al-Thusi reinforced the classical Islamic philosophical tradition by affirming God as the Necessary Existent while also proposing a hierarchical structure of being that connects divine reality with the material world. This finding was expected, given al-Thusi's position as both a philosopher and a theologian. However, it also highlights his ability to avoid direct conflict with theological orthodoxy, which often criticized metaphysical speculation (Yazofa, T., dkk., (2023). His metaphysics neither contradicts earlier theories nor introduces radical innovations, but rather consolidates them into a coherent system that could be more easily harmonized with Islamic doctrine. The discussion here suggests that al-Thusi's metaphysics is not merely a repetition of Ibn Sina but a re-articulation that makes his philosophy both accessible and defensible within Islamic intellectual culture.

One of the most striking findings concerns al-Thusi's scientific achievements in astronomy and mathematics. His development of trigonometry as an independent discipline and his introduction of the Tusi Couple in planetary models mark a turning point in the history of science. These results exceeded the initial expectations of the research, which aimed primarily at exploring his philosophical system, and they demonstrate that his contributions were not confined to abstract reasoning but extended into empirical and mathematical sciences (Yazofa, T., dkk., (2023). Compared to earlier theories, al-Thusi's scientific innovations clearly moved beyond the frameworks inherited from Ptolemaic astronomy, preparing the ground for later developments in both the Islamic and European contexts. This shows that his contributions not only supported but also challenged earlier theories, opening pathways that led to the scientific revolution. The results confirm that al-Thusi should be recognized as a bridge figure who connected medieval Islamic scholarship with the emerging rationality of the modern scientific world.

The overarching theme that emerges from the findings is al-Thusi's consistent integration of rational inquiry with spiritual and ethical concerns. This synthesis validates the expectation that his philosophy would embody the Islamic intellectual aspiration of uniting revelation and reason. The study demonstrates that across logic, ethics, metaphysics, and science, al-Thusi did not treat these as isolated fields but as interconnected elements of a comprehensive worldview. This integration supports earlier Islamic philosophical traditions but also challenges any theory that insists on a strict dichotomy between religion and rational thought (Al Umam, M., 2024). Instead, the results

of this research support the argument that Islamic philosophy at its best provides a holistic model of knowledge that remains relevant today.

Conclusion

This study has critically examined the philosophical thought of Nashiruddin al-Thusi, with particular focus on his contributions in logic, ethics, metaphysics, and science. The results demonstrate that al-Thusi's intellectual project was characterized by a coherent integration of rational inquiry and spiritual insight. His systematic framework in logic strengthened the foundation of philosophical reasoning within the Islamic tradition, while his tripartite ethical model expanded moral philosophy beyond the individual to encompass family and society. In metaphysics, his reaffirmation of the distinction between necessary and contingent existence provided a rational yet theologically consistent understanding of divine reality. His scientific contributions, most notably in astronomy and mathematics, reveal his role as both a philosopher and a pioneering scientist whose work bridged the medieval Islamic and early modern European intellectual worlds.

By presenting these findings, this research has moved the body of scientific knowledge forward by offering a holistic perspective on al-Thusi's thought. Rather than examining his contributions in isolation, this study has synthesized his philosophical and scientific achievements into an integrated worldview that remains relevant to contemporary discussions on education, ethics, and the relationship between reason and revelation. However, it must be acknowledged that the study has limitations. The analysis was based primarily on textual sources, and while these provide valuable insights, they may not capture the full historical reception and influence of al-Thusi's works across different regions and schools of thought. Future research could address these limitations by exploring manuscript traditions, comparative studies, and the broader intellectual networks that shaped and were shaped by al-Thusi.

In light of these findings, several recommendations can be made for future studies. First, further research should be directed toward a comparative analysis of al-Thusi's philosophy with that of other major Islamic and Western thinkers, such as Ibn Sina, al-Farabi, or even Thomas Aquinas, to highlight cross-cultural intellectual exchanges. Second, a more detailed exploration of the transmission of al-Thusi's scientific works into Latin and their reception in Europe would enrich our understanding of his role in global intellectual history. Third, contemporary educational research could benefit from applying al-Thusi's integrative framework of ethics and rationality to modern curricula, especially in contexts where the dichotomy between religious and secular knowledge remains a challenge. Finally, future studies should consider interdisciplinary approaches that connect philosophy, history, and the social sciences in order to assess the enduring relevance of al-Thusi's ideas for addressing today's crises of morality, leadership, and the pursuit of truth.

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